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FACULTY OF BUSINESS AND MANAGEMENT
INSTITUTE OF ECONOMICS

PROPOSAL OF A PROCESS OPTIMIZING

NÁVRH OPTIMALIZACE PROCESU

DIPLOMOVÁ PRÁCE
MASTER'S THESIS

AUTOR PRÁCE — Bc. JITKA ŠAFÁŘOVÁ
AUTHOR

VEDOUCÍ PRÁCE — Ing. ZDEŇKA VIDECKÁ, Ph.D.
SUPERVISOR

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Abstrakt

Diplomová práce se zabývá návrhem procesů oddělení System Activation & Deactivation společnosti X s cílem zlepšení těchto procesů a navýšení efektivity těchto procesů v rámci firmy.

Abstract

Presented diploma thesis deals with Proposal for the Department of System Activation & Deactivation processes in Company, its aim is to improve these processes in order to increase the efficiency of these processes within the company.

Klíčová slova

Proces, aktivace a deaktivace služeb, mapování hodnotových toků, procesní analýza, plýtvání, úzké místo, procesní optimalizace, metoda Six Sigma, analýza hlavní příčiny.

Key words

Process, service activation and deactivation, value stream mapping, process analysis, waste, bottleneck, process optimization, Six Sigma method, root cause analysis.

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Čestné prohlášení

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Poděkování

Ráda bych poděkovala vedoucí této diplomové práce, paní Ing. Zdeňce Vídecké, Ph.D. za odborné vedení a pomoc při zpracovávání.

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INTRODUCTION

The main task of all layers of company's management is to reduce costs, manage material resources, achieve better economic results and improve productivity and effectivity of company's business processes. This diploma thesis focuses on improving the management of selected process of Company. This worldwide known intercultural company is one of the biggest provider of Information Technology (here and after IT) services and it is being recognized for its services all over the world. The company has long tradition and experiences in the field of providing IT services to its clients. Currently the company has to face the stiff competition, so its success depends on the constant improvement of provided services and company's processes, systematic analysis and implementation of the new management methods in order to improve the quality of provided services. The topic, I am dealing with in the presented thesis, can contribute to find solution for related problems with quality of the provided products (services) and also could lead to improvement of client satisfaction with provided services.

I chose the process of Activation and Deactivation of the services provided to Company's clients as process that should be optimized and improved. It is essential process in the service delivery to X's clients and therefore this process should work in a very efficient way to fulfil clients' needs and requirements.

I focused on the Process optimization, because it is very interesting area that can bring change in the company's performance with visible benefit (if applied in a correct way). The term "Process Optimization" predetermines a change. In fact, the area of changes is indefinable at the very beginning of process optimization, because even initiator of the optimization cannot predict in advance, what field will be eventually optimized. Breadth of this concept can evolve in change of the process that bring us surprising and completely new knowledge about the existing processes. Reason for the choice of this topic was the possibility to discover process of Service Activation & Deactivation, in which I was cooperating under the job role of Service Coordinator. The presented thesis shows solution for the process optimization that will benefit the whole company, but which by its nature does not burden the client. Results of my analysis and process optimization were already applied to Service

Activation & Deactivation process. These results are actually insight that reflects the proposed solution and gives a rational reason for change in the process.

OBJECTIVES OF THE THESIS

The presented thesis is focusing on the Service Activation & Deactivation process (here and after SA&D) optimization and on shortening the total SA&D process time. The proposal is based on the Analysis of process control in the SA&D department for the current situation and on the theoretical knowledge. The Analysis of the process help us to identify shortcomings and weaknesses of the each thread to the process. Since the SA&D department is currently confronted with issues with long waiting processing times for SA&D process, the aim of this thesis is shortening the processing times by implementing Value Stream map method with intention of decreasing number of faulty checklists that have been created now. The Proposal is being formed based on the performed Analysis of Service Activation & Deactivation process in the Analytical part. Proposal of the process optimization for SA&D department is solved by using Six Sigma method, 5-Whys methodology and by creation of Value Stream map. It means, that within the proposed solution there will be Value Stream map created for current situation, which allow us to find bottlenecks in production. With the elimination of bottlenecks, new Value Stream map will be created including proposals to eliminate long waiting process times for SA&D process.

1. THEORETICAL BACKGROUND

In the following Theoretical part I will gather all information that are needed for the Analysis of current processes in the presented company and also for the Analysis of the service delivery in chosen department.

Theoretical part will be divided into two parts. First part will be dedicated to theory background that is needed for understanding of the presented issue. Second part will be dedicated introduction of the chosen company, its long history and wide range of company's products and services. Then I will focus on company's Business model, Service Delivery model and Organizational structures.

1.1 Business processes

Objective of the following chapter is to provide current and comprehensive view on procedural implementation in private sector organizations.

1.1.1 Definition and structure of the process

Process management is based on the assumption that basic element of process control is described, defined, structured, sourced and inputs secured process. Process should have a clearly-defined owners, who implement the process for specific customer.

In the literature you can come across many definitions of the term process, below are some of them:

Řepa, V., 2006:"*Business process is a summary of activities, transforming summary of inputs into summary of outputs (goods or services) for other people or processes.*"

Nenadál, J. a kol., 2005: "*Process is bordered by a group of interrelated activities (their definition is contained in the formal documentation) with pre-defined inputs and outputs. Process has a clear and accurately defined beginning and end.*"

Generally speaking, process is a set of interrelated activities that gives added value to its inputs using the resources (see Figure 1). Through this added value, inputs are transformed into the outputs, which are later assigned to specific customers.

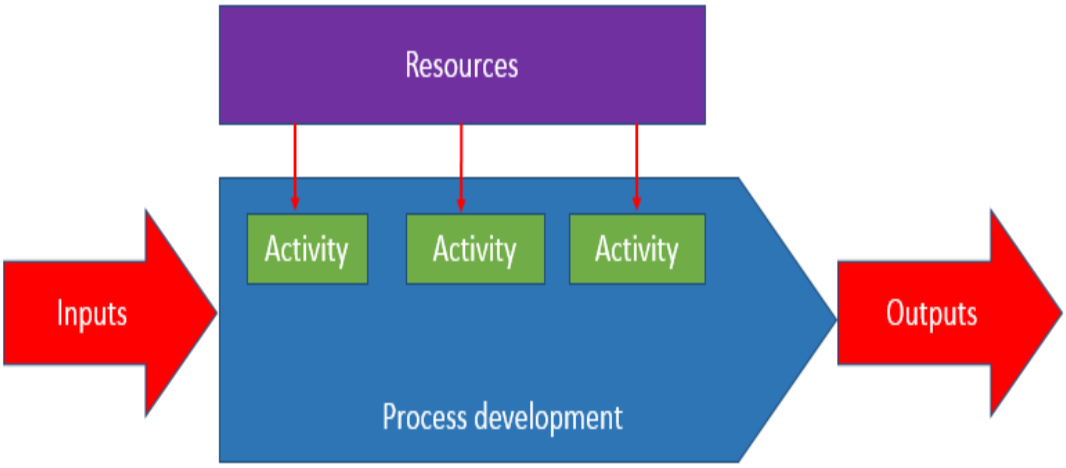


Figure 1: Process diagram, Source: Grasseová M. (2008), Process management in public sector.

For each process we must define the following characteristics:

a) *Objective and measurable indicators of the process,*
b) *Owners and customers of the process,*
c) *Inputs, resources, activities, and outputs of the process,*
d) *Risks and regulators of process control,*
e) *Beginning, end and interface of the process.*[1]

1.1.2 Process types

Processes may be segmented from different perspectives, but in practice we mainly use classification by priority and purpose of given process. This classification can be divided into following three categories:

[1] ŠMÍDA, F. *Zavádění a rozvoj procesního řízení ve firmě.* 2007. page 29.

1. **Main (key) processes**

In this category belong processes that are generated across the company and represent key area for the existence of the company. An example might be Global process for System Activation and Deactivation (here and after SA&D) across Company.

2. **Management processes**

Management processes are directly connected to main processes by defining and ensuring the development and management of company's performance. It also includes managerial processes that ensure the integrity and functioning of the company. An example might be Local SA&D process.

3. **Supporting processes**

In this category we can include all processes ensuring the functionality of the company. It creates products for other processes that are important for their proper functioning. An example might be checklist creation in the SA&D department. (13)

1.1.3 Comparison of Business functional management and Business process management

Following chapter is dedicated to the essential differences between business functional and process approach to company's management and their subsequent comparison. Nowadays, companies must adapt to demanding customer needs and requirements. This adaption can be achieved by companies through process management, which responds to this change in customer behavior. Process management also ensures capability for flexible response to change in conditions of functioning of the Company.

Functional business management

The beginning of introducing a functional approach to management dates back to 1776, when it was first mentioned in the book of Adam Smith an *Inquiry into Nature and Causes of the Wealth of Nations*. Functional approach divides the work to the simplest activities that can be performed even by unskilled people. In fact, this approach was applied in the Henry Ford factories and its implementation led to the creation of the first assembly–line production in the world. At the beginning of 20th century Business functional management enabled increase performance of individual employees, time saving, and acceleration of work and increase of production.

The basic feature of the functional approach is the division of labor between the functional units, which are based on skills of company employees. Organizational structure unify these functional units in departments that perform sub-functions of the process. The problem arises in a situation, when it is necessary to transfer outcome of the work between the individual units. Due to the fact that employees of individual departments have no information about continuity of all activities, they cannot evaluate the final output of the work, which has been performed. However, not even supervision of all activities as unit is performed, which is in my opinion the fundamental problem. Such company is driven by the needs of functional units and it leaves only little space for change implementation. In practice, company prefer interests of functional units to interest of entire company. (14)

Despite the facts mentioned above, many companies still support business functional management in practice. The reason for that selection of functional approach are following according to Monika Grasseová:

- The functional organizational structure causes mothballed activities in individual departments, and this results in inability perform any changes,
- Employees are focused on the performance of specific activities rather than on the performance of the entire company,
- Lack of information on the process approach and its potential and benefits for the company,

- Unwillingness to change the remuneration system for a system that would be based on the actual results of measurable process performance. (14)

Business process management

Through Business process management we can look at the company as system of interrelated processes. It is characterized as a procedure, which is capable of prompt respond to the diverse requirements of its customers. It also allows transitions between individual customer's requirements when offering a variety of products and services. These transitions are accompanied by increased efficiency, economy and purposefulness in the company processes.

To proper understand the Business process management, we need to divide the process approach into three main activities:

1. **Knowledge of the processes**

Companies must be aware what processes take place in the company. Companies should be informed about the inputs and outputs, the transformation of inputs into outputs and resource consumption for these processes. Resources are crucial for the optimization of the company's processes.

2. **Verification activities for the transformation of inputs to outputs**

In this area, activities of individual processes are described. Performance parameters and roles of individual employees are determined in the process transformation.

3. **Monitoring measurements and Continual improvement**

The last area focuses on final evaluation of the process. Process owners analyze performance indicators to evaluate the effectiveness and efficiency of set procedures. Based on indicators changes in the process are introducing. Changes in the process are later applied in process optimization. (14)

Comparison of Business process and functional management

Process approach in comparison to functional approach is more complex choice. Process approach is focused not only on the results of work, but also on the procedures that are heading towards its achievement. Work takes place throughout the company and not separately in each department. Process approach is oriented to the different customers' needs and use interactions and interface to control the products and intermediate products of the entire process. Process approach also gives more space for change to inefficient processes through subsequent optimization.

Optimization is used to continuously improve processes and work and in practice, you will more likely see process improvement rather than improvement of functional units or departments. Companies with functional approach improve only work of employees in individual departments and do not improve department itself.

For the clarity, I created following table with basic differences between functional and process approach.

Functional approach	Process approach
Local oriented employees	Global orientation through processes
Problem of transformation strategic objectives in the indicators	Interconnected strategic objectives and indicators of the process. By process approach we can say: Think globally, act locally.
External customer orientation. Employees ignore the purpose and links to external customers and suppliers - minimal coordination with other activities.	The existence of internal and external customers. Employees know what inputs are used for implementation of activities and from whom they take them and what outputs and who provide follow-up activities to implementation - Synergies with other activities.
Problematic definition of responsibilities for the outcome of the process and creation of value for customers.	Responsibility and creation of value for customers is determined by process
Communication through the layers of organizational structure.	Communication within the course of the process.
Problematic cost allocation to activities.	Direct cost allocation to activities.
Decision making is influenced by the activities (functions).	Decision making is determined by the need of processes and customers.
Measurement of activities is isolated from the context of other activities.	Measurement of activities take sin account its expected benefits and performance within the process as such.
Information between activities aren't shared on a regular basis.	Information are subject of common interest and are commonly shared.
Employees are paid according to their contribution to the activity.	Employees are paid according to their contribution to the performance of the process, or to the company as such.
Employee participation in problem solving is zero or is limited to the activities they carry out.	Fundamental problems are regularly solved by teams composed through range of activities (in the process) from all levels of the organization.

Table 1: ***Process management in public sector: Theoretical background and practical examples, 1. Vyd. Brno: Computer Press, 2008, str. 46.***

1.2 Business process improvement

1.2.1 Process Analysis

Purpose of process analysis is to reveal deficiency in selected processes and its consequent improvement. Process analysis can be performed only in the condition that company have accurately modeled processes. Analysis can help companies to identify and analyze problems in the process (e.g. organizational barriers, lack of information, unclear answers). Analysis helps with the help with identification of non-added value processes of the company, loss-making time in the processes and determines the possibility of rapid change.

Reason for using the process analysis is to discover whether it is necessary to change the current processes and why this change is inevitable.

According to Grasseová, there are three the types of process analysis:

Benchmarking

"*Benchmarking is the process of systematically comparison of processes, organizational structures, products and performance of the company with other globally successful companies with intention to achieve entrepreneurial excellence.*"[2]

In practice, benchmarking at first perform detailed mapping of processes in the company and decide, which processes needs to be improved and afterwards comparison with the processes of more successful companies of a similar type is performed. This makes the company capable to understand the functioning of the process in more successful company and by that the company can apply these methods to improve its own processes.

[2] GRASSEOVÁ, M. *Procesní řízení ve veřejném sektoru: teoretická východiska a praktické příklady.* 1. Vyd. Brno: Computer Press, 2008. Page 75.

Organizational Analysis

Role of organizational analysis is to discover optimal organizational structure of the process. Outcomes of the analysis are utilized during the creation of measures for effective management process. It also helps us to identify whether the processes are carried out effectively in terms of usability of human resources. In practice, organizational analysis use information from other analysis types, which gives the analysis a comprehensive view of the functioning of the entire company.

The Analysis of the process

In this type of process analysis we examine whether the process takes place in several variants or whether it is suitably centralized or decentralized, what is the way the process is standardized and to what extent use the benefit from economies of scale. Results of the analysis is in practice discovery of deficiencies related to existence of an appropriate range of activities, ambiguous responsibilities or absence of measuring the efficiency of cost and time. (13)

1.2.2 Key performance indicator

Key performance indicators (here and after KPI) define a set of values used to measure against. These raw sets of values, which are fed to systems in charge of summarizing the information, are called indicators. Indicators identifiable and marked as possible candidates for KPIs can be summarized into following sub-categories:

- Quantitative indicators, which can be presented with number,
- Qualitative indicators, which can’t be represented as a number,
- Leading indicators, which can predict the future outcome of a process,
- Input indicators, which measure the amount of resources consumed during the generation of the outcome,
- Process indicators, which represent the efficiency of the productivity of the process,
- Output indicators, which reflect the outcome or results of the process activities,

- Practical indicators that interface with existing company processes,
- Directional indicators specifying whether a company is getting better or not,
- Actionable indicators are sufficiently in a company's control to affect change,
- Financial indicators used in performance measurement and when looking at an operating index,
- Key performance indicators, in practical terms and for strategic development, are objectives to be targeted that will add the most value to the business. These are also referred to as "Key success indicators". (18)

1.2.3 Process Optimization

After execution of mapping business processes and their consequent analysis, we are able to decide, which of these processes need to be optimized and which processes need to be completely changed. Processes can be improved in two ways - Business process improvement or Business process reengineering.

Business process improvement (BPI) improving business processes continuously. During continuous monitoring of individual components of the process, we can identify opportunities for their improvement, which consequently can be implemented into the entire system of processes within the company. This way of improving business processes is appropriate especially for incremental improvement.

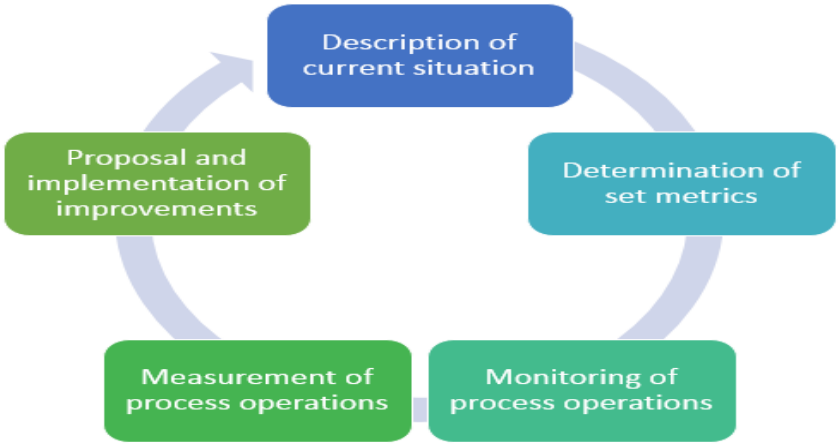


Figure 2: Business process improvement, Source: Řepa, V. (2007), Business processes page 16.

Business process reengineering (here and after BPR) is a completely different approach than the continuous improvement process. BPR assumes that all business processes are insufficient and must be fundamentally changed. This fact allows the company to create entirely new process, without paying attention to the current state of the process. Functioning BPR demonstrate the Figure 3.

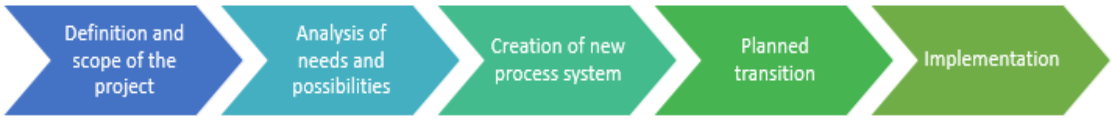


Figure 3: Model of fundamental reengineering, Source: Řepa, V. (2007), Business processes, page 17.

If we compare both approaches of process improvement, we can say that they are completely different. Their differences are given in the beginning of their application to business processes. BPI builds on existing processes, while BPR creates an entirely new processes. Different is also the importance range and final changes. (15)

	Improvement	Innovation
Level of change	Progressive	Radical
Starting point	Existing process	Green meadow
Frequency of changes	One-time / Progressive	One=time
Time needed	Short	Long
Participation	Bottom-up	Top-down
Typical extent	Limited, within given functional area	Broad, among functional area
Risk	Medium	High
Primary tool	Classic statistical process control	Information technology
Type of change	Cultural	Cultural / Structural

Table 2: Improvement versus Innovation of the process according to Davenport.

1.2.4 Methods for business process improvement

As mentioned above, the improvement process is based on the observation and analysis of functional processes in the company. Through acquisition of new knowledge and skills, we form these processes to future state, which fulfills the requirements and assumptions summarized in specific objectives. This condition can be achieved by many known methods and standard procedures. (13)

In the following chapters I will mention models, you can meet in practice most often.

1.2.4.1 Deming's cycle

PDCA cycle is a simple model of continuous improvement process with universal use. It can be used not only for managing change in the process, but also for creation specific measures that has arisen from the implementation of process management. In practice, PDCA cycle is used by many companies to introduce all sorts of changes, but without consequent monitoring of results. PDCA can be applied to general areas of project management and its activity consists of the following stages:

- **Plan (P-plan)** – covers the planning process,
- **Do (D-Do)** – process management and coordination according to plan,
- **Check (C-check)** – monitoring and control over the process, identifies the actual state,
- **Take action (A-Act)** – corrective actions and consequent implementation. (13)

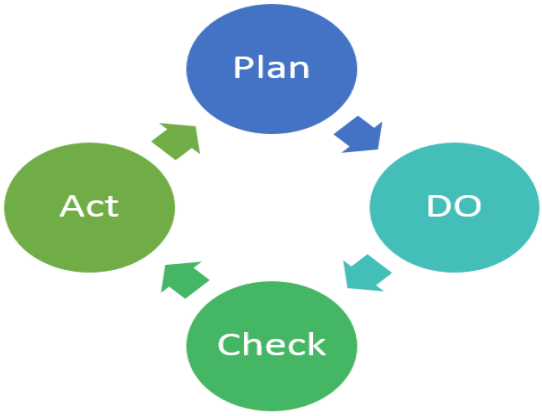


Figure 4: PDCA model, Source: Own Processing.

1.3 Lean Six Sigma

Six Sigma is a set of techniques and tools for process improvement. It was developed by Motorola in 1986. Six Sigma seeks to improve quality of process outputs by identifying and removing the causes of defects (errors) and minimizing variability in manufacturing and business processes. A Six Sigma process is one, in which 99.99966 % of the products manufactured are statistically expected to be free of defects.

In recent years, some practitioners have combined Six Sigma ideas with Lean manufacturing to create a methodology named Lean Six Sigma. The Lean Six Sigma methodology views lean manufacturing, which addresses process flow and waste issues, and Six Sigma, with its focus on variation and design. Lean Six Sigma is used by X Company. (19)

1.3.1 DMAIC cycle

DMAIC cycle is an extension to the Deming's cycle. Just as Deming's cycle it is a method of continuous improvement process with universal application (e.g. the quality of product, a process, etc.). The individual phases of DMAIC cycle define us goals that must be determined during the implementation of process improvement in our company.

The individual phases are following:

- ***D (Define)*** *– definition of opportunities for improvement,*
- ***M (Measure)*** *– measurement of processes to improve performance,*
- ***A (Analyze)*** *– analysis of problematic phenomena of process and recognition of their causes,*
- ***I (Improve)*** *– improving of parameters and elimination of process defects,*
- ***C (Control)*** *– control of future process in order to secure increased performance.*[3]

[3] SVOZILOVÁ, A. *Zlepšení podnikových procesů.* 1. Vyd. Praha" Grada, 2011. Page 87. ISBN 978-80-247-3938-0.

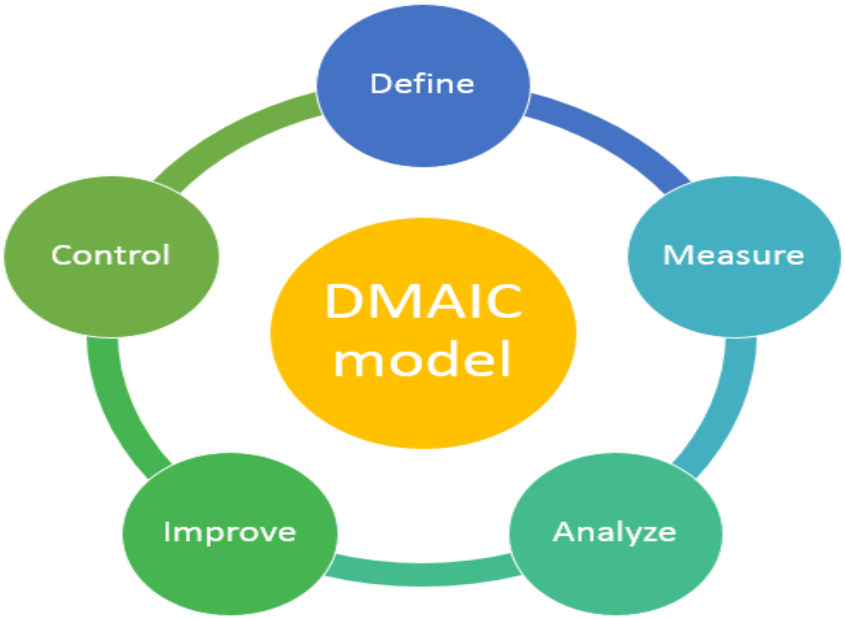


Figure 5: DMAIC model, Source: Own Processing.

1.4 Lean Six Sigma tools

1.4.1 Ishikawa diagram

Ishikawa diagrams (see Figure 4) were proposed by Kaoru Ishikawa in the 1960s. Kaoru Ishikawa defined the fishbone as one of the seven basic tools of quality control. This method is widely spread across all business sectors. Causes can be derived from brainstorming sessions. These groups can be labeled as categories of the fishbone. Causes can be traced back to root causes with the 5-Whys technique.

The manufacturing categories typically used as primary causes in the diagram are:

- **People:** Anyone involved with the process,
- **Methods:** How the process is performed and the specific requirements for doing it, such as policies, procedures, rules, regulations and laws,
- **Machines:** Any equipment, computers, tools, etc. required to accomplish the job,

- **Materials:** Raw materials, parts, pens, paper, etc. used to produce the final product,
- **Measurements:** Data generated from the process that are used to evaluate its quality,
- **Environment:** The conditions, such as location, time, temperature and culture, in which the process operate. (19)

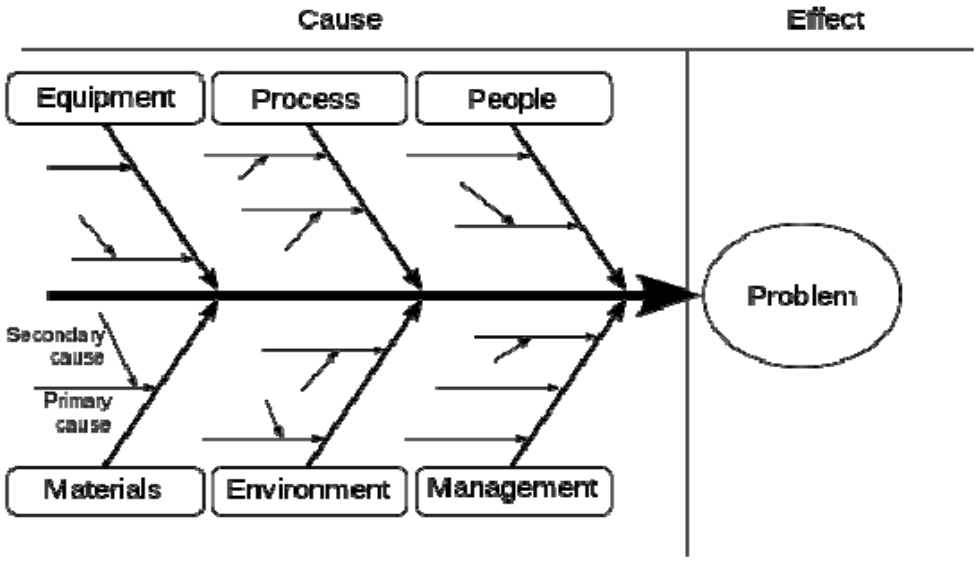


Figure 6: Ishikawa diagram (Fishbone diagram), Source: *Quality Education: Roadmap for an understanding of Quality*. (19)

1.4.2 5-Whys

The 5-Whys is a well-known root cause analysis technique that originated at Toyota and has been adopted by many other companies that have implemented Lean manufacturing principles. A major advantage to the 5-Whys technique is that it is relatively easy to use and apply, and its easy application makes it a practical tool for root cause analysis in problem solving. (19)

1.4.3 Flowchart

Flowchart is a diagram that uses graphic symbols to depict the nature and flow of the steps in a process. Flowcharts are used in analyzing, designing, documenting or managing a process or program in various fields. Flow charts can be also used in designing and documenting complex processes or programs. Kaoru Ishikawa defined the flowchart as one of the seven basic tools of quality control.

The two most common types of boxes in a flowchart are following:

- A process step, usually called *activity*, and denoted as a rectangular box,
- A decision, usually denoted as a diamond. (19)

1.4.4 Value Stream map

Value Stream map (here and after VSM) is a picture of major activities that deliver results to the customer. It pictures all wastes, including queues, idle time, bottlenecks and delays in the process. VSM describes activities for only one type of customer value or "product". It helps to create a graphic plan for implementation or improvements in the process.

1.5 Lean Administration

Company's business performance consists of wide range of company's internal processes. All business activities are performed within these given processes, unfortunately wide range of the processes will eventually create waste. Waste is everything that doesn't add value to the client or to company's product, it only adds time and cost to the internal processes.

Lean administration can provide the company with tools to make business process value stream visible. Visualization of the processes can help the company to identify pain points that cause wastes in their internal processes. Lean Administration enables companies to use these tools to make their business processes work in more efficient way. Essential part of implementing Lean administration in office environment is the ability to reduce all wastes from the process and to recognize all types of waste.

Waste can occur in any business processes in both manufacturing and administration environment. (10)

In the points below you can see the 7 types of wastes with examples:

1. **Transport** – movement of paperwork in the office operations,
2. **Inventory** – too little inventory can lose sales, too much can hide problems,
3. **Motion** – remove unnecessary motion from office,
4. **Waiting** – minimalize the client waiting time and minimalize "value add" time,
5. **Overproduction** – obvious waste, always aim to meet exactly, what the customer expects,
6. **Over Processing** – identify the unnecessary steps within a process,
7. **Defects** – reducing the number of processing mistakes. (12)

Monitoring waste in service business requires usage of value stream mapping, which helps to identify the waste in the process. Management of the company has to support such investigations, so the company can make the needed changes to reduced waste in the processes immediately, so they could work more efficiently and add the value for the customer.

1.6 Characteristic of the company

Company is the leading company in IT services delivery and consulting with years of experiences in innovation. The key line of business of X is the sale of IT technologies (data storage servers, systems, software and IT services).

Company provides complex solutions and services to its clients as a system integrator. Company mainly focuses on using smart solutions that leads to sustainable development and promotes benefits of e-commerce in daily life. X is engaged in many Corporate Social Responsibility programs that are dealing with specific social and environmental needs. In terms of revenues and number of employees, X's position in the Czech environment is the same as its position in Global environment.

Key part of Company's business is to provide high-quality services and solutions to its clients. To achieve such results, company established program X, which is constantly focusing on IT services delivery and solutions according to latest market trends and specific customer demands. Thanks to the acquisition of the Internet security systems, company offers complete security solution (e.g. Green Data Center solution) by providing specific IT functionality that supports business operations, IT infrastructure monitoring and administration services, Service Level agreement (here and after SLA) tracking, maintenance and technical support. (1)

2 PRESENT SITUATION AND PROBLEM ANALYSIS

In the following Analytical part I will analyze current processes in the presented Company and also the service delivery in chosen department.

At the beginning of the Analytical part I will analyze Global processes in chosen company. Afterwards I will analyze Local SA&D processes, which will derive from company's internal information I gained during my work experience as SA&D Coordinator.

2.1 Analytical part evaluation

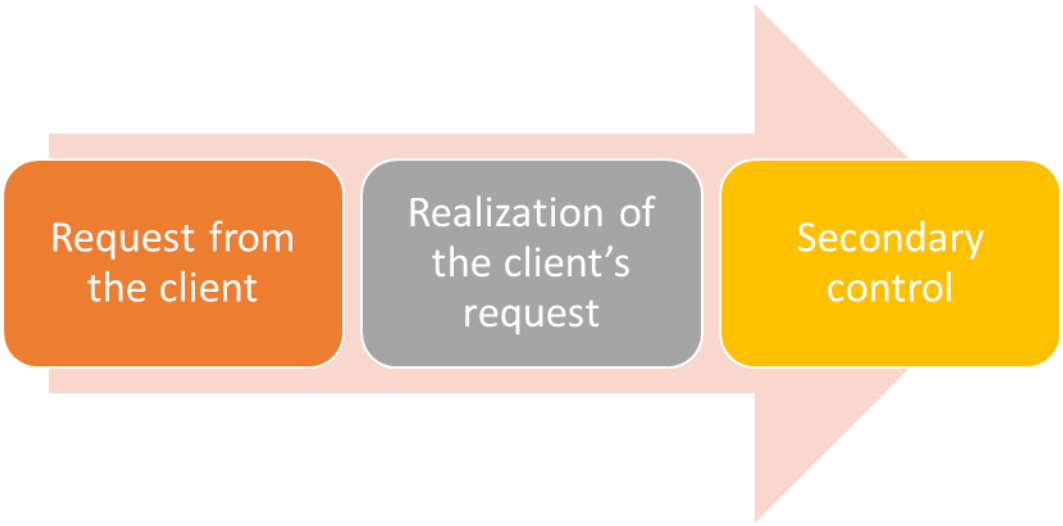
Based on performed analysis of SA&D process in Brno I identified several issues and pain points I would like to focus on in Proposal part.

Total Lead time for the overall SA&D process is quite high and further extension can cause issues to the clients. For example, if they receive the installed machines / servers later than expected.

Number of wrongly created checklists needs to be reduced to minimum to prevent any other waiting time in the whole process.

3 PROPOSAL OF PROCESS OPTIMALIZATION

My diploma thesis is focused on the whole process of SA&D department, which represents Secondary control of Service delivery to company's internal clients. Main objective of the presented thesis is to shorten the total lead time for the SA&D process. This process is the last process step for the overall Service delivery to company's internal clients (as you can see in the Process chart 4). After secondary control is performed, service is handed over to the client.



Process chart 1: Service delivery for company's internal clients, Source: Own processing.

I chose Secondary control as main focus of the presented thesis, because I was working as Service coordinator and I am very familiar with SA&D process flow. By the performed analysis I was able to identify key issues in the process that need to be reduced. The purpose of the presented thesis is to reduce the time needed for the whole process from request submission to the checklist approval.

I realized that SA&D process could be improved if the old version of Order / Request form would be replaced with newer version. I initiated the project of new order form creation in the SA&D department. I organized meetings with involved parties to find out, what information is missing in the form and how I could improve the form. In the past the biggest issue with the order form was

that incorrect information have been included there, so incorrect checklists have been created and needed to be erased later (which lead to longer lead times).

By creation of new order form the team will request more relevant information from the requestor and department will get the important information sooner and that way the department can improve the whole process and shorten the lead time of the process duration. Thus, I decided to point my diploma thesis in this direction.

After getting all needed approvals for my project I was also supported by my manager, who initiated the project implementation into the process flow. Newly created Order form is now being used as important part of Brno SA&D process.

The presented issue will be solved by Value Stream map method. As the main issue is long waiting times in the SA&D process, I will focus on reducing the total waiting times in the process. In the proposal part I will also identify and evaluate the total number of the waste / pain points in the process. Aim of the thesis is to shorten the total processing time for each checklist and also to downsize the total number of incorrectly created checklists.

This chapter is dedicated to the solution for my Analysis of SA&D process. I identified the pain point, which is situated at the very beginning of the process. Project managers have to fill order form so that checklist can be created by SA&D coordinator. This Order form is old and insufficient. Important information is missing and in many cases it creates confusion, because checklists with wrong information are created. Thus, I decided to create new version of the Order form, which would save time to all parties included in the process.

In the following section, I'm explaining why I decided to create the new request template, how the process will be changed and how this change can contribute to improve the overall process in terms of time saving.

3.1 Current Value Stream Map

Based on analysis of the SA&D process performed above I created VSM to visualize the overall process flow. As an example I used data for specific area of internal clients - German accounts, that has been under my responsibility as Service Coordinator.

There have been identified also local challenges that the process is currently facing:

- Incorrect evidences (wrong, insufficient, missing),
- Obsolete order (request) form,
- Assignments,
- Process improvement,
- Chasing competencies to complete their tasks in time.

I described each process step of the process flow and I also counted the lead times (both minimum and maximum) for each process step. Counting the minimum and maximum lead times helps us to identify the gap between the best case scenario and the worst case scenario and also the total amount of waiting time for each possibility. As you can see in the table above the difference between minimum and maximum activity time is more than 110 000 minutes and the difference between waiting times for each possibility is more than 29 000 minutes. These numbers imply that there is great space for improvements in the SA&D process, as the aim is to reduce the gap between lead times and waiting times to the minimum and also downsize the number of faulty checklists.

VA index for the above mentioned VSM is difficult to calculate. As we are not in the manufacturing environment, but in the service environment the ratio of total time for added value to the product is almost the same as the lead time for the product creation. It means that for our special case the VA index is less than 1 %, meaning that the product added value is quite limited. Calculate the average lead time for SA&D process is very difficult, because the total processing time differ significantly for each client. Average processing time depends on the type of requests

and on specifics for each client. Both of these attributes can have a significant impact on prolongation of the total processing time.

The other part I was focusing on during VSM creation is identification of the pain points in the process.

According to the seven wastes classification (see chapter 1.1) I identified three types of waste:

- Defect (1 and 2),
- Over Processing (3, 5, 7, and 8),
- Waiting (4, 6 and 9).

After careful consideration I decided to focus on pain points associated with defect waste classification, in particular on pain point mentioned in the number one of the current VSM (Incomplete order form / missing details for checklist). The biggest issue with defects is long lead time of the overall process and wrongly created checklists, which cause delays for the clients. Therefore in the following chapters I will focus on analysis of long processing time and on creation of the new order form that will prevent creation of wrong checklists in the future.

3.1.1 Cause of the long processing time

Although the Order form already exists, it creates many issues. Team is still receiving wrong requests from requestors, there are still significant issues with incorrect order form templates that team has to face every day. I managed to create the new version of order form, where it was clearly stated what information is needed for successful creation of the checklists. I completely changed the look and content of requests without complicated and non-understandable details. Despite all of these facts, team still had some complications with correct completeness of requests, which caused ongoing waste of time caused by resending incorrect templates back to requestors. Coordinators were unable to recognize if some information from requests are correct (e.g. incorrect Scenario, Family, missing DPE name etc.), because of not

updated option from Checklist's tool. Therefore there were created some checklists, which were after short period of time cancelled, because of these issues.

3.1.2 Root Cause Analysis

To summarize the root cause analysis I used 5-Whys method. Using 5-Whys technique helped me to find out, what the root cause really is for this particular issue.

Why #1

Why did the problem happened?

Team started receiving many wrong requests sent by requesters (Server Factory, SSO's, and PM's).

Why #2

Why team started receiving so many wrong requests by requestors (Server Factory, SSO's, and PM's)?

Order form included all possible, but also old details and options of the servers and some requesters did not have the relevant knowledge how to correctly fill the order form.

Why #3

Why order form included all possible, but also old details and options of the servers and some requesters did not have the relevant knowledge how to correctly fill the order form?

SA&D tool was not updated for long period of time and there were some big changes which caused later some discrepancies reflected in information shown in the order form and current reality.

Why #4

Why SA&D tool was not updated for long period of time and there were some big changes which caused later some discrepancies reflected in information shown in the order form and current reality?

I was investigating how to avoid these kinds of discrepancies and created the new order form with macro.

Based on 5-Whys analysis, I identified ongoing issues with current Order form and I decided to create the new version of Order form using Macro, which would help the team to stop receiving incorrect requests from requesters. The updated Order form allows requesters to choose only those options, which are actual and updated and don't allow them to add their own details they assume, is correct. If requesters want to choose something different what is not edited option created by macro, they are not able to do that and they have to use only those combinations of Families and Scenarios, which are possible in the updated Order form.

4 EVALUATION OF PROPOSED PROCESS OPTIMALIZATION

Presented proposal of SA&D process optimization is based on my personal experience on position of SA&D coordinator. These experiences helped me to identify the defects in the analyzed process and also helped me to form the presented proposal. As you could have understood from the described organizational structure, SA&D team stays at very foundations of the company in terms of service delivery to company clients. Thus, it is essential to have optimized, clear process, which lead time is reduced to the minimum as the client wants the service to be activated or deactivated as soon as possible.

The company's culture is very focused on quality of the processes and standardization. This means that processes are being analyzed and optimized periodically. The reason for that is the changing environment in the IT business and also company's initiative to continually improve its performance and processes. That results is system, where employees work more effectively, and time spend on process is being spent in more efficient way.

Proposal has been constructed on feedback from involved parties, discussion with SA&D team and approval from SA&D team management. Key advantages of proposed solutions are following:

- Reduced reworking of checklists (number of wrongly created checklists have been reduced about 25 %),
- Time spent on the whole process has been significantly reduced (minimal total time dropped down about 15 minutes and maximal total time dropped down about 79 710 minutes),
- Issues captured in the very beginning of the SA&D process (new order form has been created to prevent creation of wrong checklists due to incorrect information in the old version of order form),
- Less work for dispatcher (number of wrongly created checklists reduced from 55 % to 30 % so dispatcher doesn't have to redistribute one checklist several times),

- Improved quality of checklists – more relevant information in request,
- Clear responsibility over checklists' competency questions (assignments),
- Better communication with involved parties,
- Creation of guide needed for successful request completion (not available until now).

Implementation of the suggested proposal is, of course, just one part of the whole process improvement. Company has to consider to implement also new version of SA&D tool, which is currently very slow and it is time consuming to create checklists with it, as well as working with the tool overall. It complicates work of the SA&D coordinator, who spends too much time on checklists creation.

As I already mentioned, my proposal has been already implemented by management of SA&D department in Brno. The Order form template is being used for some time now and work on requests coming to the SA&D common mailbox has been reduced. Dispatcher can now spent more time on their checklists, instead of dealing with wrong requests all the time. SA&D coordinators can improve quality of each checklist as they reduced time spent on checklist creation and checklist cancellation. Reworking of the checklists has gone to almost zero.

Unfortunately from the financial point of you I was unable to get any information from my manager, as these information are highly confidential material and therefore cannot be shared with all employees. Based on facts that I stated above, I tried to calculate the benefits of my process optimization proposal. Time spent on the whole process has been reduced (as you can see from the new VSM for the SA&D process) and number of wrongly created checklist have been reduced simultaneously, that means company saved money on each checklist, because of the above mentioned time reduction. The service has been delivered to company internal clients sooner, so it has also effect on the added value to company clients and finally the customer satisfaction increased, when they received service / devices earlier than expected in the contract.

5 CONCLUSION

There has been one main goal of the presented thesis and that was to short the processing times in the SA&D department in company. Together with main goal, there has been also secondary goal set up and that was to decrease number of faulty checklists in the SA&D department. The proposal is based on the Analysis of process control in the SA&D department for the current situation and on the theoretical knowledge.

The presented thesis is divided into three main parts: Theoretical part, Analytical part and Proposal part. Theoretical part deals with theoretical knowledge that is crucial for the understanding of the presented issue. I gathered this knowledge from the literature and academic resources. Also theoretical knowledge of the company is being presented here to better understand the background of the process and the environment, in which the process is being performed. Content of the Analytical part is the Analysis of current processes in the company as well as the Analysis of the SA&D department process, on which the presented thesis is focusing on.

As I mentioned in the beginning of presented thesis, SA&D department fulfils crucial role in Service delivery within the company. Therefore it is essential to have process for the department efficient and without any other prolongations that cause customer dissatisfaction at the other side.

As you can see in the chapter 4 I managed to meet both objectives – main and secondary. Number of faulty checklists dropped down about 25 % and total time of the overall process for SA&D department dropped down significantly as well. I was able to accomplish these results by implementing new order form for newly created checklists for both activation and deactivation of services.

At the end there can be said that there is still great space for improvements in SA&D department. This thesis is focused only on one particular area out of all pain points I identified in the process. Process has been shortened, but as company focuses on continual improvement of all company processes, optimization will be needed in the future again, when customer requirements and needs will change again. New optimized process significantly lowers the time and with lowering the time spent,

the cost are decreasing as well. When the costs are low, the earning increases and that is the goal of every successful company.

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LIST OF SHORTCUTS

IT	Information Technology
SA&D	Service Activation and Deactivation
DPE	Delivery Project Executive
KPI	Key Performance Indicators
SSO	Server System Operations
PM	Project Manager
VSM	Value Stream Map
BPI	Business Process Improvement
BPR	Business Process Reengineering
PDCA	Plan, Do, Check, Act (Deming's cycle)
DMAIC	Define, Measure, Analyze, Improve, Control cycle

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